CLAIMS

Having thus described the preferred embodiments, the invention is now claimed to be:

1. A diagnostic imaging system **(10)** comprising:

a means **(60)** for selecting a shape model **(52)** of an organ;

a means **(62)** for best fitting the selected model **(52)** to the image data; and

a manual means **(66)** for modifying selected regions of the model **(52)** to precisely match the image data.

2. The system as set forth in claim 1, wherein the shape model **(52)** is represented by an adaptive mesh **(54)** including:

vertices and links which connect individual vertices, the manual means **(66)** deforming the mesh **(54)** such that individual vertices are moved in accordance with a move of a mouse **(38)**.

3. The system as set forth in claim 1, wherein the shape model **(52)** is represented by an adaptive mesh **(54)** including vertices and the manual means **(66)** includes:

manual tools **(68)** which are used by a user to manipulate the mesh **(54)** to match the image data.

4. The system as set forth in claim 3, wherein the manual tools **(68)** include:

a Gaussian pull tool **(72)** which deforms a surface of the model **(52)** by pulling selected vertices along a predefined smooth curve.

5. The system as set forth in claim 4, wherein the predefined smooth curve is a Gaussian curve.

6. The system as set forth in claim 5, wherein the Gaussian curve is controlled by a radius which defines a width of Gaussian spread.

7. The system as set forth in claim 5, wherein the Gaussian curve is controlled by x- and y-radii, wherein x-radius defines a width of Gaussian spread in a direction of a move of a mouse **(38)** and y-radius defines a width of Gaussian spread in a direction which is orthogonal to the mouse move.

8. The system as set forth in claim 5, wherein the Gaussian curve is controlled by a function which smoothly transitions from 1 to 0.

9. The system as set forth in claim 5, wherein the vertices are pulled a distance **(d)** from an initial position **(74)** defined by a mouse **(38)** to an end position **(76)** defined by the mouse **(38)**.

10. The system as set forth in claim 3, wherein the manual tools **(68)** include:

a sphere tool **(80)** which moves vertices located within a predefined radius of the sphere to a surface of the sphere.

11. The system as set forth in claim 10, wherein a mouse **(38)** is used to adjust the spherical deformation.

12. The system as set forth in claim 3, wherein the manual tools **(68)** include:

a pencil tool **(90)** which deforms an original boundary **(92)** of the model **(52)** to align the original boundary **(92)** with a drawing path **(94)** defined by a mouse **(38)**.

13. The system as set forth in claim 12, wherein the vertices located within a capture range **(106)** defined by end planes **(102, 104)** are pulled towards a

capture plane **(100)** which is normal to a motion of the mouse **(38)** along the drawing path **(94)**.

14. The system as set forth in claim 1, wherein the best fitting means **(62)** fits the model **(52)** by applying at least one of scaling, rotation, and translation to the model **(52)** as a whole.

15. The system as set forth in claim 1, wherein the model **(52)** is selected from an organ model database **(50)** and further including:

a means **(38, 16)** for dragging and dropping the model **(52)** on the image data.

16. The system as set forth in claim 1, further including:

a means **(18)** for acquiring the image data representative of at least the organ of a subject.

17. A method of segmenting the image of the diagnostic imaging system **(10)** of claim 1, comprising:

dragging and dropping the selected model **(52)** on the image data;

globally scaling, rotating and translating the model **(52)** to fit the image data; and

deforming local regions of the model **(52)** with a set of manual tools **(68)** to match the image data.

18. The method as set forth in claim 17, wherein the model is represented by an adaptive mesh **(54)** which includes vertices and links connecting individual vertices and the step of deforming includes:

selecting vertices to be deformed;

selecting a transformation algorithm to transform the vertices;

converting mouse motion into local deformation parameters; and

transforming the selected vertices in the model by the local deformation parameters.

19. The method as set forth in claim 17, wherein the set of manual tools includes at least one of:

a Gaussian pull tool **(72)**;

a Sphere push tool **(80)**; and

a Pencil tool **(90)**.